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by

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THE JOURNAL OF PHILOSOPHY

THE PROBLEM OF MOTION

THE special and general theories of relativity have introduced important changes in terms of which the processes occurring in the physical world are to be described. Instead of possessing two independent systems of ordering relations, space and time, independent of each other and the entities composing physical processes, there occurs the single system of space-time. It is also an important consequence of the special and general theories that certain absolutes, unavoidable in classical mechanics, because of the independent system of relations, must now be treated as relative magnitudes. These magnitudes are measurable distances and times, mass, velocity, acceleration, and fields of force. The relativity of these magnitudes is expressed by the fact that as occurrences in nature they involve specific coördinate systems and can no longer be treated as absolutes. What is more significant, is that no coördinate system or frame of reference is privileged. This follows from the fact that there occurs no absolute space with an inherent structure and no physical medium, like the ether, to provide a unique and unambiguous frame. Thus the motion matter possesses, supposedly, has no significance as an absolute occurrence.

Now the possibility of rendering relativity more universal than could occur were the fundamental concepts of classical mechanics retained, depends upon the fact that some relation must exist between the relational structure of space-time and matter. This is a basic principle of the general theory of relativity as it occurs in Einstein. The ordering relations or metrical structure of space-time are no longer to be regarded as separate from the entities or terms that are ordered. It is from this fact that so divergent theories as those of Einstein, Eddington, and Whitehead are derived. These theories depend upon the interpretation of the relation between space-time and the actual constituents of the physical world, interpretations made in the interest of an adequate account of physical process and the concepts in terms of which nature is finally to be conceived.

The relativity of space-time relations, which as separate systems provided the ordering relations in nature, is expressed by two principles; that the measured spatial and temporal magnitudes vary with the choice of co-ordinate systems, and that the geometry describing the space-time relations has become amalgamated with physics. It

is this latter fact that is important. It means that the structure of the space-time continuum is an expression of the relations among the actual constituents of the physical world. The relational structure of the four-dimensional metrical continuum is not an expression of the relations among geometrical elements, abstractly considered; point-instants, for example. It must be interpreted as an expression of the relations among the actual entities in nature and their properties.

The amalgamation with physics is accomplished by the fact that the metrical structure of space-time is a changing or variable structure. Einstein expresses its changing properties by affirming that space-time is conditioned by matter. The law of gravitation expresses the manner in which the metrical properties of space-time are affected by matter, or that space-time is a relational and variable structure. The metrical properties of a region are an expression of the equation for gravitation, an equation that states, not the manner in which bodies move under the action of absolute forces, but the manner in which free bodies move. It is also possible by this means to represent the gravitational field in terms of differential equations, and to avoid the troublesome notion of action at a distance, or an absolute field of extended force. Now the fact that the equation for gravitation specifies the manner in which free bodies move involves the thesis that the structure of relations of space-time is a changing structure. The metrical properties of a region vary with the properties of matter in that region; and from this relation of space-time and matter Einstein deduces the additional qualification that the metrical properties of the universe as a whole are a function of the quantity and distribution of matter in the universe. Space and time relations are to be considered as derivative. The relations of the space-time continuum are, therefore, on Einstein's theory an expression of relations among physical entities and their properties, and the fundamental structure of nature is not geometrical in character.

Now the problem of kinematic motion is a crucial problem in any theory of nature. By kinematic motion is understood translatory motion, and by calling motion a problem is meant that any account of physical processes must provide nature with a meaning for motion, a meaning that is consistent with the fundamental concepts employed. In fact, the endeavor to provide a satisfactory account of kinematic motion is not disassociated from the differences characterizing the systems of Eddington and Whitehead.

Kinematic motion is an observed occurrence; perceived bodies change relations with one another or appear successively to occupy positions. But there occur processes in the physical world that, although not observed, are none the less kinematic. Indeed a large

part of the inference to the existence of such entities as molecules, atoms, and electrons, dropping from consideration the essential character of these entities, is based on the capacity of such constituents of natural processes to move. The existence of the kinematic elements is not separable in fact from their motion. The molecular and atomic theory of matter, the dynamical theory of heat and gases, the corpuscular theory of the nature of an electron, imply the existence of pervasive and fundamental processes in nature that are kinematic. The atomicity inherent in physical processes, if this atomicity is a fundamental characteristic of a physical system, is inseparable from the fact that the elements move, and that there must be some meaning for their motion. The kinematic elements are not given twice over; first, as a plurality of real beings, and secondly, as moving. Their existence and their motion, or rest—since the two are correlative—is the same complex occurrence; so that the motion of unobserved kinematic bodies is as much a primordial property of nature as the discontinuity and atomicity that these entities imply. So much would appear to be required by observation and inferred on the basis of what is observed. Thus it follows that a meaning must be found for not only the motion of molar bodies, but for the motion of the kinematic particles out of which matter is built.

If the metrical properties of space-time are conditioned by matter, these are conditioned by matter in motion. Such motion evidently can not be defined with reference to space or to the metrical field, since the properties imply motion or its correlative. This Einstein stated by affirming that inertial masses do not occur relative to the continuum, but only relative to one another. Kinematic motion, if space-time is derivative, is the change of relations among kinematic elements, not the motion of these elements with reference to a metrical frame. Coördinate systems in terms of which the frames are defined are material bodies; so that motion is a set of changing relations among material entities. The kinematic elements must themselves form the referents for motion; one kinematic body must move with reference to another, since motion is the change of relations among such terms. Motion will not be defined by the path a body describes; it does not occur in space, or time, and is not defined by points and instants.

One may pause here for a moment to consider the grounds for such opposing theories as those developed by Eddington and Whitehead. Eddington interprets the philosophical import of the general theory in a manner that reduces physical nature to a system of relations that are geometrical in essence. Physical concepts are absorbed by those that are geometrical. "Give me a world," writes Edding-

ton, "in which there are relations, and I will construct matter and motion."[1] Matter and motion are not processes in space-time; they are, according to Eddington, space-time magnitudes.

The question at once arises as to the manner in which such a theory, so far removed from the principles of classical mechanics, the usual interpretation of the general theory, and immediate sense experience of nature, is deduced from the general theory. In so far as the theory is deductive it would appear to be derived from two principles. The first principle is that the ordering relations of space-time must express the relations among the actual constituents of the physical world. The second principle is that all the magnitudes, such as velocity, mass, distances, and times, supposed to be inherent and absolute properties of nature in classical mechanics, are relative to coördinate systems. Thus motion, whether in terms of velocity or acceleration, can possess no absolute significance.

One may consider what immediately follows from the first principle. If it is possible to represent the variations of the potentials of the fields of force in terms of the properties of the field, it would no doubt appear legitimate to affirm that these potentials do not exist in space-time, but are space-time magnitudes. If in the general theory a relation exists between the continuum and matter, it would appear a natural deduction to render matter a function of space-time, space-time being not the relations and entities dealt with in an abstract geometry, but the relations and entities constitutive of nature, in this case intervals and interval relations.[2]

This interpretation involves, as Eddington states, the literal identification of the tensor specifying the metrical properties of a region and the tensor specifying those properties that are called physical—matter, its density and velocity. This does not mean that matter appears directly as the property of the metrical field, as this is determined by observation to possess either a Euclidean or non-Euclidean structure. The metrical structure and the existence of matter and motion occur together as the expressions of the intrinsic condition of nature. It is the identity of the two equations, the equation specifying the metrical properties and the equation specifying the physical properties, that refer to the actual condition of the physical world. The union of the two equations is an expression of the relations among the entities composing physical nature.[3] The reason for this fact will appear presently. Thus the original meaning of the law of gravitation must be revised. It is no longer a statement of the manner in which matter conditions the metrical structure; it is an assertion of identity between the tensor G_{ik},

[1] *Space, Time and Gravitation*, p. 198.

[2] *The Mathematical Theory of Relativity*, p. 38–39 (note).

[3] *The Mathematical Theory of Relativity*, p. 50.

which gives the metrical properties, and the tensor *Tik*, which gives the physical properties of a region. The law refers to an absolute character of the physical world of which the metrical field, considered either as Euclidean or non-Euclidean, and matter are expressions.[4] The law does not, according to the present interpretation, state the manner in which free bodies move. Nature is thus geometrical in essence, its fundamental structure and entities found by the use of the tensor calculus.[5]

The second deduction is not separate from the first. Those terms and relations constitutive of nature must be absolute in character. Their properties and relations are independent of coördinate systems. One must agree with Eddington on the point that nature as a physical system must possess absolute characteristics, whether such absolute characteristics be found in interval relations, in the events, of Whitehead, or in matter in motion. A complete relativity is difficult to obtain. Since there is no unique referent or relational structure in terms of which motion can be defined, the coördinate systems are arbitrary, and motion in this sense purely relative. The same situation applies to the specific metrics of a region, whether the metrical properties be Euclidean or non-Euclidean. The geometry employed is not an actual condition, independent of the frame of reference, of the region in question. It follows from the relativity of the physical properties of a region—matter in motion—that the metrics can not be absolute. Moreover, if the metrical field and matter are identified, as in the revised law of gravitation, relativity on one side of the equation means relativity on the other. Now the metrics of a region undergo a variation in structure; but the variation itself, this change of structure, can not be an intrinsic property of nature. The non-variability of structure is the fact that eliminates absolute Euclidean space as a separate system of ordering relations. Geometrical relations can not themselves change; those that form Euclidean or non-Euclidean geometry are given eternally. There is no meaning to be found for a Euclidean system changing into a non-Euclidean system, considered alone and as a geometrical structure. Matter in motion being a relative, not an absolute, property, of nature, renders it impossible to think of such geometrical relations as relations among kinematic elements. Therefore the law of gravitation should assume a new significance. Interval and interval relations, those constants one becomes acquainted with in the tensor calculus, provide the stuff of which physical nature is composed.

Nature can not, Eddington concludes, be regarded in reality as a system of material bodies and moving molecules, atoms and electrons;

[4] *Space, Time and Gravitation*, p. 191.

[5] *The Mathematical Theory of Relativity*, p. 49.

since the fact of motion, being relative, can not be an intrinsic condition. The metrical field can not be used as a referent. Moreover, because of its changing structure, this same field can not be an intrinsic property of the world; Euclidean and non-Euclidean relations are together the manner in which nature is regarded from coördinate systems.

Now such a system leads to deductive consequences that are far from agreeable. Nature is fundamentally a geometrical system and therefore static. Motion which involves a change of relations can not be a physical process; to become physical it must be translated into something absolute and constant. Matter and motion, such as occurs in a gas, is a process relative to an observing mind; this same consequence applies to the motions of electrons and atoms, as well as to the motion of observed bodies. Nature can, on the mathematical theory, contain no changing relations and no kinematic elements whose own existence is inseparable from this change. These processes, either inferred or observed to exist, are contributors of the mind.

Whitehead's theory of nature may, from our point of view, be regarded, in part, as also deductive. Space-time relations are relations among the actual entities of which nature is composed. Moreover, motion must be included among natural processes; therefore, nature must embody something in terms of which motion can be defined, and defined in a manner that makes motion of bodies completely relative. If space-time relations are regarded as relations among events, not moving bodies, either molar or molecular, motion may be defined in terms of space. Whitehead, to provide a meaning for motion, remains with the classical mechanics to this extent. A relational theory of space-time serves in the capacity of absolute space.

The result, however, occasions the denial of what Whitehead calls the casual heterogeneity of space. The consequence follows from the premise. If motion is defined in terms of the spatial structure, this structure is not affected by the motion of kinematic elements. Its properties are obliged to remain constant, since a variability in its structure—the changing of Euclidean to non-Euclidean space in the vicinity of matter—could only be explained by assuming the prior fact of motion. It would no longer serve as a coördinate system or a referent. And here an additional consideration intervenes. If spatial relations are independent of the motion of kinematic elements, they are plainly independent of their existence, so that the ordering relations in nature are divorced from the distinction between molar and molecular phenomena. The distinction between macroscopic and microscopic equations, a distinction made by Lorentz and implicated in the foundations of the general theory,

loses its significance. The macroscopic equations apply to the motions and volumes of molar bodies, which properties are to be regarded as the residuum of the motions of the kinematic particles—electrons, for example, composing them. The macroscopic equations refer to these constitutive motions. Now, since the space-time relations are independent of the distinction between molar and molecular phenomena announced by the equations, the properties of nature that are expressed by the relatedness may be given in sense awareness. From this fact it may immediately be concluded that nature is ultimately a continuum, since the discontinuity as a fundamental characteristic of natural processes, that is found primarily in the difference between molar and molecular phenomena, is divorced from the relatedness found in nature. All distinctions are distinctions within the continuum; so far as atomicity is concerned, a molar body is as much a discrete and atomic object as an electron, since both are abstractions and the respective atomicity and relations of each are reducible to the properties of the continuum in which they appear as adjectives.[6] To call an electron or the sun an adjective or property of an event is only to affirm in the end that the structure of relations of space and time is divorced from both the existence and motion of kinematic bodies. Space may therefore be uniform, its structure independent of unobserved processes, and provide the necessary referent for motion.[7] The properties on which relations depend are thus given immediately in sense-awareness.

In Whitehead's theory one encounters a description of natural processes which will provide a place for the occurrences of relative motion. Motion is defined in terms of spatial coördinates, therefore space must be uniform, and nature ultimately a continuum. Events, with properties from which space and time relations are derived, are absolutes, not matter in motion. If the relations were relations among objects, one great merit attachable to Whitehead's system would need to be withdrawn; it would provide no meaning for relative motion. Moreover, the arguments to the continuity of nature would disappear.

The theories of Eddington and of Whitehead may, therefore, be considered as attempts to solve the problem of motion, to recognize the relations in nature and the atomicity and motion of kinematic bodies. In the one case, a connection exists, as it is found in the general theory, but both relations and moving elements fall into the mind, since the relations, being connected with matter, are connected with matter in motion, which possesses no significance apart from arbitrary coördinates. The other preserves both and bestows a

[6] *Principle of Relativity*, p. 74.
[7] *Principle of Relativity*, pp. 58–59.

meaning on the relativity of motion; but the relations are necessarily independent of discontinuity and of moving bodies, and, accordingly, nature is a continuum, whose own properties are fundamental, not matter in motion, since these properties are the origin of the uniform relatedness.[8]

From this situation the conclusion follows that, if the general theory is to be taken as philosophically sound in its original import, motion is, in the end, not to be considered as merely relative. Motion is an absolute property of nature, that is, it possesses a significance apart from the notion of arbitrary frames of reference.

The reasons in favor of retaining the original import of the general theory of relativity are that the kinetic-atomic theory of matter may be retained, space-time relations are not separate from kinematic processes, motion may retain its status of a causal phenomenon, and the law of gravitation preserves its original significance. But in this case motion should remain an intrinsic, not a relative property of nature. If space-time is dependent on matter, its properties are inseparable from the fact of discontinuity. The discreteness of kinematic elements is implied by their motion, a motion that is a change of relations. One body can not move relative to another unless the bodies are distinguished, and it can not be at rest in one frame and in motion in another unless it is the same entity. The identity and differentiation are independent of a choice of coördinates. Absolute space, with its inherent structure, provided not only a unique frame of reference for motion, but it provided as well a simple and logical medium for defining the plurality of moving objects that their relative motion involves. Its function was dual in character. It could readily be stated what is to be understood by many molecules moving in a gas. Material particles could be said to occupy positions or points, or describe determinate paths through the continuum, since the ordering relations formed an independent system. The unfortunate fact was that the material particles assumed the attributes of the medium in which they moved, becoming infinitely divisible and finally resolving themselves into points. The process of motion was thus reduced to a static order of geometrical relations, becoming a property of Euclidean space. The result is comparable to that arising from the substitution elements of the four-dimensional metrical continuum for the physical entities. Since a body can not occupy a static instant, or remain at the same point throughout a succession of moments, no meaning is to be attached to a material particle—a molecule, for instance—since it is reduced to the properties of the ordering relations of space-time. But the reduction of the properties of matter to those of space-time is pos-

[8] Therefore, in Whitehead, as in Eddington, the law of gravitation must be re-interpreted.

sible only on the condition that the relational structure is independent of matter, an independence not deducible from the general theory. If nature is composed of matter, not space-time relations or interval and interval relations, the discontinuity involved in relative motion is not definable in terms of the continuum. To affirm that a particle is at a point or occupies a position is to say that the particle in question possesses a definite set of relations to certain other particles. A point or position is a variable for which a set of objects provide values. Atomicity is thus presupposed, as an absolute property, involving no coördinate system. Bodies in motion or at rest do not exist at timeless points or durationless instants, since these relational concepts are derivative. But they are not thereby resolved into elements of the continuum. One may state the situation as follows: either atomicity is ultimate or matter is reduced to the properties of the ordering relations; in the latter case, the deductions of Eddington follow, and what we know of nature, in terms of abstract geometry and physical sciences, is a contribution of the mind. If a referent is required to give significance to the identity and differentiations involved, it will be a unique referent.[9]

The atomic theory of matter refers to an absolute property of physical nature, and a meaning should exist for discontinuity apart from coördinate systems or reference. But, if space-time is dependent on matter, this proposition should also be true for motion. The motion and being of kinematic elements is the same complex fact. The logical culmination of the general theory, the metrical properties of the universe as a whole, as they are given by Einstein, involve such a meaning for motion. The metrical properties of the universe as a whole are a function of the quantity and distribution of matter in the universe; no coördinate system or frame is implied. The measurement is not made from the earth, the sun, or an atom; it is an absolute property. But on the atomic theory of matter, matter is kinematic in constitution, so that a meaning for motion exists apart from arbitrary coördinates. It is an absolute property. Coordinate systems are unavoidable in practice; the question, however, is whether a kinetic atomic theory can hold if the absoluteness of motion is not retained. The reply to the question is that it can not, and the general theory of relativity, in disposing with an absolute structure of relations, has emphasized this conclusion. The necessity of coördinate systems or arbitrarily chosen frames of reference apply only to the molar phenomena where their use is unavoidable. But motion, like atomicity, is an absolute property, a change of relations that a physical system embodies apart from a selected frame.

YALE UNIVERSITY. F. P. HOSKYN.

[9] Such as the referent that has been advocated by Professor Northrop in this JOURNAL, Vol. XXV, Nos. 16 and 17.

THE THEORY OF PERSPECTIVES AS AN INTERPRETATION OF FUNCTIONAL ANALYSIS [1]

THERE are some considerations of functional analysis which I wish to present, especially in relation to the theory of perspectives so current in present philosophy as a response to the development of relativity in physics, following that in biology. I shall assume that the theory of perspectives is a technique of analysis. For whatever else it may be, surely it is at least that. I shall not assume that it is more than that, i.e., that it repeats the structure of reality—I borrow the phrase—for although that is very often taken for granted, there is no serious attempt to establish it. I do wish to deal with the theory of perspectives as furnishing a continuity that would otherwise be lacking in a theory of analysis. This supposed discontinuity arises through selection in a process of abstracting objects by denotative gesture in the perceptual situation. When these abstractions are employed in analysis where no unifying character is recognized, there is a discontinuity of objects independent of context, i.e., "mutually independent entities." The answer which I shall give to the problem thus suggested is that these objects can be taken as independent and discontinuous only in so far as the process of analysis is ignored and they are treated as results only. And they are unified in that each has value and significance as an element of analysis only in carrying out the purpose of the act of analysis to its consummation.

Relativity received its great impetus with the invention of the calculus by which motion could be dealt with directly, i.e., as going on rather than as result. And it ought not to have caused any great surprise, so it has been pretty generally expressed, that upon this new basis of motion going on, the concepts of space and time should have been found to be as relative as modern thought has presented them. But although the theory of perspectives has received renewed importance through the recent development of mathematics and physics, it is not, of course, in any sense new. Aside from its high development by Leibniz, or even its importance in medieval philosophy, it found its inception in the relativity of the Sophists as complementary to the absolutistic philosophy of Opposites. The absolutistic philosophy dealt essentially in terms of "results" which were not to be defined in terms of the approach toward them. For although Aristotle would define a sphere in terms of rotation of a semi-circle, nevertheless that was in geometry abstracted from movable matter, while in the physics of heavenly bodies the spheres were "perfect," and it dealt with the paths of those bodies as completed

[1] Read at the meeting of the Western Division of the American Philosophical Association, Cincinnati, March, 1929.

and perfect circles. Thus the "results" were simply there and as such involved only contemplation. They were "ideas" or "ideals." The relativism of the Sophists was a philosophy of practice. What it lacked, however, in order to be a tenable position was a development of a "theory of reference" such as is indicated in contemporary philosophy by a "frame of reference," and without which it must inevitably merit all the scorn intended by the word "sophistry." A theory of reference signifies that analysis is never just analysis at large. This theory of reference Leibniz partially supplied.

Assuming that the indeterminate character of relativity, for example, that of the Sophists, arises from the lack of frame of reference in the doctrine, the success of Leibniz is understood to have been because he made that provision. For he did introduce *activity* into perspectives when he made it the essence of the monad, going from a lower to a higher in so far as the higher lay within itself. But that his revision was not thoroughgoing is evident in the doctrine of "pre-established harmony" by which it was denied that monads could interact. How then could this progress to the higher come about? There was no accounting for it; it must simply be recorded. There was, therefore, carried over into his philosophy, to that extent, the difficulty of having to deal with "results" rather than with activity going on—a difficulty which had troubled the Greeks in their analysis and was the point of attack by Zeno.

Under the profound influence of the new science, the line of thought initiated by Leibniz was developed by Kant, although not sufficiently worked out by either, through the definition of those "results" in terms of the approach to them. Rather than being platonic ideals of another realm, or "pre-established" by God, they were transcendental "heuristic ideas" of practical activity. And this was the Copernican Revolution. The mind was made active rather than passive. His failure was that of ignoring the careful distinction which he had drawn between the "transcendental" and the "transcendent," making the former mean the same as the latter. For then the transcendental element indicated something beyond the empirical world. That is to say, after destroying metaphysics, by anticipating to some extent Whitehead's Theory of Extensive Abstraction, he resurrected it.

This, however, was the consistent result of the psychological analysis which Kant had carried over from the Empiricist philosophy. Because that analysis went back to the presupposition that only what were already objects of knowledge may be known, i.e., that the "act" of knowing is an immediate relation between the mind and the object of knowledge; or, restating the presupposition in other words, the function of knowledge is to give the nature of reality, at least

in the sense that the structure of reality is said to be repeated in knowledge. It allowed, perhaps, a choice between a dualism and an idealism, but in any case it reduced the knowledge function to immediacy, which was to surrender altogether to "results" which were there only for contemplation.

Nevertheless, there was not completely lost to the new movement the ground which Kant had covered, for the simple reason that philosophy is not "remote from the pitiful facts of nature" (Russell: *Mysticism and Logic*, p. 61). His insistence upon the empirical had resulted in a separation into the aggregate and the law only because he had failed to show completely the empirical character of the transcendental. But this in turn was impossible so long as the function of knowledge was understood as repeating the nature of reality, since the results of analysis must then be identified with that from which it started, and the process of analysis itself ignored. What remained, in order to take advantage of Kant's attempt, was to show the empirical character of the transcendental, that is to say, to answer empirically the question: what is it that carries over through the act of analysis to its completion, unifying it. The answer here given is that the empirical character which remains to be pointed out is what is indicated in the act of analysis by the term "purpose" or "intention."

The general position of this paper is that a theory of perspectives can not be presented upon a merely perceptual basis. For perception, taken as a cognitive function, does not take account of context as such; each element is what it is, its own reality. Mr. Russell has just republished a striking example of this (*Our Knowledge of the External World*, p. 95, Edition of 1929). I refer to his illustration of the penny. Starting with a private world occupying a perspective, he makes an hypothesis of a distribution of other perspectives. In each there may be an aspect of the penny and these photographs constitute the real penny, as well as represent its dissolution. The physical penny is a logical construction. There is no thing. The aspects come to be correlated with each other by "prejudice" (*Ibid.*, p. 112) or "motive" for collection (*Ibid.*, p. 113), provided they are accompanied by appropriate muscular sensations (*Ibid.*, p. 82). But how does an hypothesis arise? When a view is just had as a simple metaphysical ultimate, in what sense is it a "view *of*" for the spectator? If each view is merely contemplative, how is there any felt need for organization? Such a conception must resolutely deny any basis for selection. But despite this metaphysical democracy, we consider some views better and more adequate than others. "Starting from a world of helter-skelter sense-data, we wish to collect them into series" (*Ibid.*, p. 114). And

although this "wish" is passed off as being just a prejudice, it signifies something more than contemplation. Aside from the inadequate account of the growth from a private world of stimuli to a public world of things on the basis of mutually independent sensations, there remains to be noted that data are attended to, organized, and selected on the basis of providing an hypothesis because contemplation has been interrupted. When, therefore, the denotation is taken as cognition, it presents a collocation of disconnected elements. Yet perception, being the ground for abstraction, is an indispensable condition for knowledge in presenting what answers to these very disconnected elements. Knowledge, however, will never be more than an unaccountable collocation of objects, with no character of true or false, unless a unifying factor enters into each phase of the analysis. This happens when there is an activity aiming at the result.

All this is admittedly an old story. Bergson did no more than summarize the whole modern problem of philosophy, and one which Hegel stated quite well, when he showed analysis to be sectionalization, indicating the need of a unifying element. But this he made impossible for any intellectual attempt by the demands which he made upon knowledge, i.e., that it reproduce reality. For while analysis certainly does sectionalize, analysis itself, like any other process, is not a section. It arises in, and constitutes a modification of, the situation where it is found, and has no absolute bounds. The realist has made "mind" a section of reality. As such it can in no way constitute the unity of a process in a world external to it, and it can show no process inside itself. By making the world into sections, e.g., the mental and the physical, not to mention others, the problem is stated in a disjunctive proposition: The mind either does or does not direct the world. If it does, we have idealism; if not, realism. Hence realism is committed to the proposition that the mind does not change that *of* which it thinks; and the term "of" is as inexplicable in one occasionalism as in another.

The problem of unification, however, is not a problem general to reality, as Bergson supposed, but only to a particular type of reality, that is to say, where analysis may seem to leave the world disconnected, as indeed is the conclusion when knowledge is regarded as reproducing reality. For then analysis is the end for itself. We therefore avoid idealism because, while we have submitted the "mental" in the form of purpose as the unifying character, for which T. H. Green very well argued, yet it is not general to reality simply because reality extends beyond analysis. I mean not merely that there are occasions in which analysis does not occur, but indeed even where there is analysis, knowing is more than a set of abstractions, for were it not, his whole argument is futile. And the thing

analyzed is something more than to be known. Green wanted something which could be present to all its terms. His fallacious presupposition was that there had already been a cyclone of analysis and the remaining world was but a collocation of terms that needed to be unified.

The renewed attack upon the problem of the theory of perspectives utilizes the valid elements of Kant's Copernican Revolution, and consequently requires a revision of the theory of knowledge. The significance of "making the mind active" and of defining "results" in terms of an activity going on, as well as the activity in terms of the results, is to introduce the need of something more than the contemplative in the conception of the mental. The transcendental is that which participates in an act of analysis in some actual fashion, carrying it through to its consummation: it denotes the actual indication by an individual to itself of what it is about—of the significance of the present activity for what lies beyond.

The occasion for the ascription of the cognitive function to perception is that the answer to the question "what is the nature of reality" is made by the act of perceiving. In perception reality is simply there and what is there is real. It is this upon which experimental science is grounded, as against the mystery of the "something," common alike to deity, matter, and the "Theory of Sensa" (Broad: *Scientific Thought*, p. 281). Because the only possible answer to the question of nature of reality is to have and to denote it, there is a tendency to say, therefore, that reality is a collection of sections answering to the several pointings. And after this devastation there is assuredly a need for an "eternal consciousness" to get the pieces back together, as Green insisted. Or, if we do not go so far as did he—if we make the mental only one or several of these sections—then indeed there is no unifying character in the world of sections in which each counts but for itself. Thus for Russell, no less than for Green, the world is a collection of helter-skelter entities which are there to be collected into series. But the mind remains at home in its section while its ghost walks abroad as "subsisting principles." And unity is achieved only by magic.

The difficulty, then, is that when knowledge sets out to search for reality, it gets, by perceptualization, sections or units rather than unity. Inside the unit reality is timeless and compressed into immobility; between the units reality is rarefied until there is no connection. Thus it goes from absolute density to just as absolute vacuum, which nature abhors, as is well known. There is either no change at all, on the inside, or the change makes no difference on the outside.

For the units are impenetrable. But when knowledge is a process towards some goal, then there is unity where "permanence" and "change" are met together. The conception of the mental process as one among others, functioning interactively with them, demands that the "object" of knowledge be not set off as the complement of "mind," but be an element of the knowing process whose end is the achievement of some purpose. Such objects are sections abstracted by ignoring the process in which they inhere. They function as a means in the reorganization of the perceptual situation in view of something further, and are not themselves the end for knowledge. The mental, then, is a biological activity whereby an hypothetical future is constructed to become a causal factor in redirecting a world that has proved inadequate for conduct.

In distinction from the mental, the immediacy of an activity indicates that the pattern of the whole act does not exist in any particular phase of the act. The on-going activity marks out and delimits the plan of its world, but that plan does not enter into the activity in any actual or causal fashion. This is but one way of saying that where "plan" is other than an abstraction it is a special sort of conduct, and signifies the existence of perspectives in the activity of the individual. It involves the participation in the activity of the individual of an hypothetical future as an anticipation of the real future, and by which the individual assumes a standpoint outside its immediate activity. In so far as the individual's activity is completely identified with a "perspective" the term is ubiquitous for it. Its activity requires nothing more. It is absolute in its own being and complete. The individual does not become an object to itself among other objects. The sense in which a perspective is incomplete is not that in which a distribution of perspectives is supposed, but that in which it comes to be completed. Since it is the nature of a perspective to be immediately adequate, those conditions are fulfilled only in the purposive situation. For by that is meant that the individual actually indicates to itself the incompleteness, which is by way of indicating in some fashion the conditions for its completion. What is at hand, then, is not merely there for the individual, but as portending the distant real. The notion of analysis as giving the nature of reality is that a thing is what it is by virtue of its several discrete properties, which are, as Whitehead puts it, simply located. And I can do no better than commend to such a doctrine his criticism of "the fallacy of simple location." The merely given in perception may be said aptly to be simply there, but being "simply there" is not knowledge. The word "sense-data" suggests "data for." Knowledge in its least utilitarian aspect is a technique for finding out what the thing is that is promised by the

present situation. It anticipates the distant real future by a present hypothetical future which acts as a directive agent. To ignore the function of the present hypothetical future, after its rise, in guiding the act is a serious omission of an important part of the process of analysis, which not only leads to the notion of "truth" as a timeless correspondence between a present that is there and a future that is not there. But it also assumes that the construction is given once for all in the act rather than being reconstructed in the process. And this assumption is partly responsible for the further conception that mental constructions are essentially subjective and arbitrary. But a still more serious mistake, perhaps, than the omission of the last part of the act, is the omission of the first part—the rise of the hypothetical future—for being then forced out of "objective" existence it must, therefore, either exist only in a "mind," for which the conclusion is complete subjectivism or skepticism, or there must be introduced the mystery of "subsistence." But the realist does not seem to stop even with this. He is not interested in a constructed hypothetical future; rather in the "eternal objects," which go to make it up, conceived as general to reality, i.e., any possible universe. Evidently American fundamentalists are not the only opponents to the doctrine of the origin of the species.

In connection with this I should like to call attention to some rather fruitful remarks by Mr. C. I. Lewis:

> "I can not pass over this topic [the freeing of geometry from appeal to intuition or perception] without a word of protest against the widespread notion that the development of modern geometry demonstrates the falsity of Kant's *Transcendental Aesthetic*. It does indeed demonstrate the falsity of Kant's notion that such "synthetic" principles are indispensable to mathematics. But, in general, it is accurate to say that Kant's account is concerned with the source of our certainty about the *world of nature*, not with the methods of abstract science which did not exist in his day. Nothing is more obvious than that the abstractness of modern geometry comes about through definitely renouncing the thing which Kant valued in geometry—the certainty of its applicability to our space. When geometry becomes abstract, the content of the science of space splits into two distinct subjects: (1) geometry and (2) the metaphysics of space, which is concerned with the *application* of geometry. The second subject has been much discussed since the development of modern geometry, usually in the skeptical or "pragmatic" spirit (*vide* Poincaré). But it is possible—and to me it seems a fact—that Kant's basic arguments are, with qualifications, capable of being rehabilitated as *arguments concerning the certainty of our knowledge of the phenomenal world*, i.e., as a metaphysics of space." [*A Survey of Symbolic Logic, p.* 341.]

Generalizing the distinction, we have (1) "the methods of abstract science" and (2) the "application" of those methods. And I think it is significant that Mr. Lewis refers metaphysics to this *application*. Carrying this notion over to Mr. Whitehead's metaphysics of perspectives, it is seen to be the application of a technique,

and his "levels, rects, and puncts" are "objects" of that activity for the purpose of answering Berkeley's question "How can you therefore conclude that the proper object of your sight exists at a distance?" (*Alciphron, The Fourth Dialogue,* Section 10). The answer is given by showing how the still distant real is prehended from the future as possibility in the present activity, i.e., by giving the transformation formulæ. It involves the objectivity of the act of knowing, rather than such curiosities as the realistic "repetition" of the non-temporal as temporal, the objective as subjective, or the idealistic "reproduction" of the absolute as relative, or the assumption that knowing an event is referring its peculiarities to a type or universal.

Transitions and changes are given. The occasion for knowing is to determine what may be expected of them. In immediate activity the world is real only now—it has being only here. The function of reflective activity is to widen this area. It employs meanings which function as objects of knowledge in a construction intended to anticipate what lies in the future. The transitory character of the hypothetical does not therefore mark it as subjective, but as looking forward to an intended fulfillment. It is an anticipation here and now of what lies beyond. For Leibniz the passive phase of the monad, as over against its active phase, was perceptions which indicated the incompleteness of the monad and implied its completion in other monads outside. The petite perception was the distant stimulus promising something beyond; or in Berkeley's illustration, was the "small round tower" that set off against the "large square building." But while these perceptions were, so to speak, the surface qualities which implied the inside of the monads beyond, there is no way in which the "implication" could be fulfilled. The monads, said Leibniz, do not interact. They were windowless. Escape from solipsism lay in assuming a parallelism, a pre-established harmony—the bare hope of an outside world. The problem can be stated, then, as one of the organization of perspectives. The answer is that the result of implication, as experimental method, is an hypothetical construction that gives us the inside of the monad that lies ahead. This introduction of the future into the now is the establishment of co-grediency. The world of space-time, as immediately experienced, is that in which the distant real is temporally as well as spatially separated from us, and there is no attempt to indicate what the thing is. But with difficulty and inhibition there is occasion for reflection and anticipation. It is a process of experimentation—construction, test, criticism, revision—by means of materials which experience has supplied, and which are not themselves hypothetical, but are "objects" that arise in the perceptual world by an ab-

stractive process. They open the door for speculation and become the weapon of attack upon the hypothetical portended by the distant experience. By their means the spatio-temporally distant real is introduced into the "now," not as brute fact nor yet again as bare and untested possibility, but as anticipation with the merit of probability. The distant or promissory character changes to simultaneity. What is involved, then, is that abstractly this reflective world is made up of objects that are simultaneous and irrelevant to passage. But they do not, as abstractions, constitute any real world; as actual existences they constitute an hypothesis which the future may or may not verify. This means, as was said at the outset, that a theory of perspectives can not be stated on a merely perceptual basis. It is an interpretation of analysis.

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KANTOR'S LANGUAGE BEHAVIOR

NO one can doubt that language is behavior. But we wonder whether making a point of this obvious fact is going to change the attitude toward language as symbolism. Words *are* the response —the response without any conscious use of symbolism—from the viewpoint of the persons involved and from that of any others whose interest is primarily in content rather than in method. We agree that this difference can not be ignored. We ask if it can be stressed.

First of all Professor Kantor dismisses from his consideration of language as behavior all the stuff of books and printing or writing of any kind. Verbal signs are confined to written or printed characters, though why the intelligence should *be* the word when it is spoken, and be *in* a symbol when it is written is not stated. Not in these terms, that is. Symbology applies best to language, we are told, when language is removed from behavior. But how does writing remove language from behavior? Does Aimee address her radio audiences one whit more behavioristically than Bertrand Russell his printed page ones? Here it may be that we are unfair. Nothing is said of the lecturer or the radio talker in the account of language as behavior. But how should their words be classified—as living language or symbols? Language is apparently limited by the behaviorist to conversations *à duo*, because of the importance given the hearing reaction response. This response seems to be taken as an integral part of the linguistic situation, which, if expressed in groups of many more than two, would result rather disastrously for understanding.

We are reminded here that we have been gently cautioned about

knowing and understanding: "Understanding patently is not language." But earlier we have read in connection with the red light used as a symbol of danger that "the intention of warning somebody or the desire to avoid an accident is not language." These statements both seem to us to come strangely from one whose express desire was to escape "language's tangled skein." Understanding, intention, desire, and so on, were never considered language by even the most mental of the mentalists.

The intimate adjustmental acts of a psychological language can not be mere signifiers, Professor Kantor tells us. Where the lantern or the word stand for something else [something else!] we do not have language, but "some other sort of psychological performance." Just what sort is not clear in spite of much mention of implied relations. The lantern and the landmark are signifiers or significants according to one's degree of conscious reflection. On these terms a spoken word may be a symbol as well as a written one. But the reason given for the landmark's failure as psychological language is its past behavior tense: "Where in this whole situation," demands Professor Kantor, "is there that living interaction in which someone speaks to someone or tells him where to go?" Still, what was happening when the landmark was being placed? We have read in the first footnote that living language may be gestural and non-articulate, and, for all we see, setting up a warning must have the same status in language behavior as shaking one's fist. The sole difference is that with the first sort of behavior the gesture has a wider significance and application.

"The knowing," says Professor Kantor, "which accompanies referential adjustment is no more response to a symbol than the responding to a conditioning stimulus object." Nor is the knowing of symbol as symbol. The bell to the dog is not a symbol of food-presence because to the dog there is no separation of the independent objects, bell and food. But in the case of the lantern and the landmark the objects are used and accepted as signifiers though, as we have suggested, the use and acceptance as such is not always conscious. Perhaps we should say that it is not usually conscious. Is it likely that the accustomed automobile driver thinks of red as a *symbol* for "Stop!," or of green as a *symbol* for "Go!"? The pictures and diagrams Professor Kantor uses in his lectures are not his "acts of adaptation" because they are consciously referred to another thing. Where a reference is explicit we have conscious symbolism. Where it is implicit we have symbolism which is not wholly conscious, but is as much present and as necessary as the background of a picture. As long as language is living expression this reference must remain indistinct whether the language is spoken or written.

Nevertheless it is there. And calling language behavior frees neither from what is inherent in both—the qualitativeness of the mere act.

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BOOK REVIEWS

The Problem of Truth. Lectures delivered before the Philosophical Union, University of California, 1927–1928. Berkeley: University of California Press. 1928. Pp. 263.

The Problem of Truth, volume 10 of the University of California Publications in Philosophy, maintains the high standard of philosophical contribution which has characterized the series as a whole, and which has made it one of the noteworthy organs of contemporary philosophy. Of the nine contributors, Stephen C. Pepper, D. S. Mackay, W. R. Dennes, Paul Marhenke, George P. Adams, and J. Loewenberg are members of the department of philosophy at the University of California, V. F. Lenzen is a member of the department of physics at the same institution, and John H. Muirhead and W. P. Montague appear in the volume as Mills Lecturers in Philosophy. The nine articles reveal great divergencies, but are well planned and well written, and taken as a whole they reveal the major motives that are encountered in the search for the nature of truth. There is perhaps no single volume in contemporary philosophy dealing with the same topic which offers so rich a collection of material. The arguments are clear and direct and speak well for the tenor of contemporary philosophical discussion.

It is, of course, impossible in the space of a review to even adequately present, must less criticize, nine diverse arguments. But at least the main contentions may be stated, and a few criticisms suggested.

Muirhead's paper on "The Problem of Truth and Some Principles in Aid of Its Solution," while mainly an analysis of the different approaches to the problem, is of interest in indicating the dissatisfaction of the progressive idealist with the older forms of the coherence view of truth, and the groping toward a more adequate concept of coherence. Muirhead is anxious to resolve the clash within idealism between Royce and Bradley. Both of these men have made strong concessions to the notion of correspondence, and Muirhead admits that for the idealist to say that coherence must include a coherence of ideas with a larger world is to make an implicit appeal to correspondence (p. 11). Denying that this correspondence can be stated in pragmatic terms (which he interprets to mean that "to be useful is in the end the same thing as to be true"), Muirhead

believes that the ultimate criterion of truth must be internal and ideal (p. 24), and that coherence must include "comprehension of all the relevant facts that are forced upon our notice by 'the stream of events' " (p. 18). But by his own previous admission, coherence so defined smuggles in correspondence, and it appears that we are left with the position that coherence is tested by correspondence, which is certainly a queer form of the coherence position. Beyond revealing the tendencies of idealism to make its peace with empiricism, Muirhead's essay can not be said to have advanced very far the discussion of the nature of truth.

Montague's article, "Truth Subsistential and Existential," regards truth as "the 'real' considered as the object of a possible judgment" (248). It may be doubted by many that the real is a "simpler and less ambiguous category" than the true. If, for him, the content of a judgment is present both in the experience of the asserter and in the "unlimited context of the universe," then the content is a reality and the judgment is true (pp. 248, 249). This presence in a wider context may be tested in terms of the context of past experience (coherence), or by obtaining an enlargment of experience by new data (correspondence), the result being that coherence and correspondence are supplementary tests for truth. The balance of the essay is devoted to a discussion of the structure of the realm of subsistence, to a defense of "the Platonic priority and substantiveness of essences," and to the attempt to regard the realm of existence as an "inter-essential relational structure" (p. 256). The account of essences is open to many criticisms which can not profitably be discussed here.

Under the title of "Statistical Truth in Physical Science," Lenzen provides an interesting analysis of the shift from the causal laws of the classical physics to the use of statistical laws in the atomic or microscopic physics. On this statistical basis "macroscopic phenomena are average resultants of atomic processes" (p. 138). Metaphysically, such a view would harmonize with an indeterministic universe, and in spite of Lenzen's warning that the time is not ripe for such a conclusion in physics, those panting souls that are ever on the lookout for some loophole in the apparently deterministic structure of physics may undoubtedly rush in here for material to defend either indeterminism or emergent evolution, although it must be said that the doctrine of emergent evolution is compatible with either a deterministic or an indeterministic metaphysics.

In Marhenke's treatment of "The Problem of Error" is found a careful, and perhaps adequate, defense of the view that all so-called perceptual error is judgmental in nature. Th argument is based

upon a development of the multiple inherence doctrine of Whitehead. The theory is applied to even the primary qualities, and the poor penny which hardly knows whether it is elliptical or circular may be relieved to know that it is really both. The proposition "this penny is circular relatively to this standard of measurement," is not incompatible with the proposition "this penny is elliptical relatively to this perceptual standpoint" (pp. 164, 165).

Mackay, in a paper on "Esthetic and Experimental Truth," defends the interesting thesis that certainty and probability apply to the same propositions considered in different ways. That is, instrumental truths may become at any stage objects of an esthetic attitude, and so be taken as certain. This suggestion that certainty involves an attitude to instrumental truths seems to be a fruitful suggestion, but as Mackay admits, this position gives no complete solution of the problem of certainty, and other considerations would certainly be necessary to adequately account for the relation of certainty to probability.

In the essay on "Practice as the Test of Truth," Dennes may be said to defend the more critical form of the instrumental doctrine of truth in which the judgment is confirmed by the appearance in experience of "precisely the characters and relations asserted or forecasted by the initial judgment" (p. 98). This position is opposed to the looser pragmatic doctrines which confuse the relation of true ideas to useful ideas, and of all the essays is closest to the doctrine which the present reviewer has called the prediction theory of truth. Dennes does not, however, regard truth as determined by verification, and so in this respect departs from the instrumentalist position. In contrast to many loose statements in the volume about the pragmatic position, it should be noticed that Dennes has given a clear, and on the whole adequate, presentation of the positions of James and Dewey.

Pepper's presentation of "Truth by Continuity" develops two main theses. The first is concerned with Cohen's article on "Concepts and Twilight Zones," and Pepper maintains that in spite of the corrections there attempted, immanent realism is unable to account for the relation of sign and object signified. Finding the essence doctrine of immanent realism dependent upon the experience of similarity, in the positive part of the paper Pepper maintains that "our shoes are heavy with the mud of essences" (a statement which must have made Montague writhe), and to explain symbolic reference he feels it necessary to reject the experience of similarity in favor of a concept of convergent responses. His own view is a kind of behavioristic treatment of James' emphasis upon the transitions within experience. Certain symbolic parts of experience are

"tightly connected" with other parts, and initiate responses which at times "satisfy" the symbols, the test being that the references (responses?) cease. This is all that is necessary for the truth of the original symbolic experience. After laughing out identical experiences Pepper is content to talk of identical responses and effects (p. 55). His whole account seems to be based on a too simplified view of symbolic reference. Although there is much that is admirable in Pepper's essay, the criticisms which Dennes gives of the position on pages 91 to 95 seem to be essentially sound.

For Loewenberg, the controversies over truth are due to the fact that "The Fourfold Root of Truth" arises from the four aspects of judgment: the personal expression of a belief, the formal statement of this belief, the noetic awareness which prompts the judgment, and the description of an object or situation by the judgment. Correspondingly, there arise the theories of truth based upon practice, coherence, immediacy, and correspondence. According to Loewenberg, neither one of these four views is adequate by itself, and he feels impelled to regard truth as dependent upon the four elements taken jointly. This involves a choice between four levels of truth, since each element can take the other elements up into itself, and this choice Loewenberg leaves for a later date. In spite of the fine analytical insight which this essay reveals, it may be doubted if the shift to the choice of levels of truth is necessary, for it is questionable if the four aspects of judgment need be regarded as each giving rise to a theory of truth. A believer in the correspondence view of truth could maintain that the usefulness of ideas is not to be confused with truth, that formal coherence is a case of consistency and not of truth, and that bare immediacy, without a judgment that something is present or a judgment as to what is present, is neither truth nor knowledge. If a term has many meanings it may be the part of wisdom to give separate terms to the various things that are meant. In such a case, the problems which practice, coherence, and immediacy raise can be met on their own right, without regarding the term "truth" as applicable to anything except the correspondence of ideas and non-ideational reality, however this correspondence be defined.

Adams' paper on "Truth, Discourse, and Reality" is an ingenious attempt to trace the genesis of the correspondence view of truth and to show its inadequacy. This theory is believed to have gained its plausibility by a distinction between the immanent and the transcendent object of a judgment, by a separation of the realm of discourse from the realm discoursed about. Realize that there is no *what* without a *that*, no *that* without a *what*, that there is a psychological continuity from perception through images and memory

to the most rarefied form of judgment, and this separation of discourse and reality is avoided. It is then realized that the transcendent object of a true judgment is the immanent object, that it is the object itself which is the object as imagined and as described, as G. Dawes Hicks has maintained. "Truth is, in all literalness, reality itself in the form and perspective of judgment" (p. 205). It is interesting to note, however, that instrumentalism, with an equally strong insistence that discourse and non-discursive reality can not ultimately be separated, is led to a correspondence theory rather than to the coherence theory to which Adams' views point. Perhaps Adams does not do justice to this alternative conclusion from his main thesis because he assumes that the relation between content and transcendent object "could never be known or judged" (p. 205) on a correspondence view, an assumption which is gratuitous if the relation be stated in experiential terms. Such a view could admit that specific predictions could be regarded as true or false without qualification, and thereby avoid the position to which Adams is led that the final judgment as to the real nature of anything is "ideal and unattainable" (p. 203).

Taken as a whole, the present volume seems to support three observations: the controversy concerning the instrumental view of truth is passing above the narrow controversy as to whether only useful ideas are true; coherence and correspondence have lost, if they ever possessed, any clearly defined meaning which can serve as a differentia of theories of truth; contemporary discussions of truth have been merged with a sharp controversy over the status of essence and subsistence. In helping to lift the treatment of the nature of truth to these new levels, *The Problem of Truth* should perform a useful service.

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Ethical Studies. F. H. BRADLEY. Second Edition, revised, with additional Notes by the Author. Oxford: At the Clarendon Press; New York, Oxford University Press, American Branch; 1927. Pp. ix + 344. $5.00.

For decades it has been hard to find a copy of Bradley's *Ethical Studies;* and when found, the crowded and ill-spaced printing of the book was a constant offence to a reader's eye. In its second edition this classic of British ethics has been made not only accessible, but also externally attractive by the excellent type, paper, and composition which readers have come to expect from the Oxford University Press.

Many students of philosophy will now come to know *Ethical*

Studies for the first time, and it is safe to say that, whatever their doctrinal predilections, they will be impressed by the book's vigor and empirical directness and freedom from technical jargon, by the modernity of its recognition of the importance for moral psychology of the observation of the behavior of animals and children, and by its actual contribution to such observation and its interpretation. Bradley's insistence on the function of intuition in moral judgments (none of which could be demonstrable) also strikes the center of contemporary ethical discussion; for, although the doctrine is as old as Aristotle, the rationalist tendencies in both Kantian and utilitarian ethics still blind many to what seems to the reviewer its importance and truth. Bradley's agreement with the *Nicomachean Ethics* is far-reaching; but it is surprising to notice that he goes (against what would seem to be common experience and sound psychology) farther than Aristotle in regarding "habits" as morally "imputable" (*v.* p. 243). Bradley's account (probably the pioneer account in nineteenth-century British and American ethics) of moral activity as requiring and supporting, but as by no means including or exhausting, scientific, artistic, and religious activity, seems to state the position toward which value theories from the most diverse quarters are now tending. Readers will find Bradley's discussion of these matters interesting not merely as an anticipation of, but as a full-blooded contribution to, contemporary theory of value.

The metaphysical position worked out in *Principles of Logic, Appearance and Reality,* and *Essays on Truth and Reality* is largely anticipated in the present book. The reviewer feels that in *Ethical Studies* Bradley built less critically on his sources in Hegel, and found less difficulty in thinking of the Whole or Absolute as Mind, than he was later to do in *Appearance and Reality.* Although Bradley frequently refers to the need for a thorough metaphysics to ground his ethical doctrine, one may wonder whether the ethical doctrine is really made any fuller or more secure by his subsequent metaphysical inquiries. That no kind of activity is so good that we should not prefer other activities along with it, but that a certain "narrowing" by our "stations" is nevertheless best for us; that the moral ideal is the self realized in a whole of activities and relations which is systematic and yet requires considerable unsystematic moments or areas, but that this ideal can not be conceived as actual —these doctrines (as Bradley develops them and contrasts them with conflicting theories) have their own interest and instructiveness. It seems to the reviewer very doubtful: (1) whether Bradley (or anyon else) succeeds in establishing a super-relational whole of experience as the metaphysical absolute; (2) whether such a metaphysical absolute, if established, would add anything to the instructiveness or

the plausibility which may be claimed for Bradley's ethics. No one can say how much it is due to Bradley's stirring criticism that adequate naturalistic and realistic ethics to-day do justice to the organic quality of the moral life. But there is no reason to suppose that they could do still more justice to this quality if they were connected with an idealistic metaphysics.

The changes and additions in the second edition are few and brief; but (together with the larger type) they have necessitated a pagination different from that of the first edition, to which reference is so often made in the literature of the last fifty years. The discrepancy in paging produces ambiguity even in the Preface to the Second Edition, where it is hard to make sure of the reference of "the pages between 50 and 89." "Those changes in the text which he [the author] had intended" are incorporated without any designation, and it happens that the reviewer, who has compared verbatim only a few specimen pages of the two editions, has found no change but the omission of the word "is" on p. 270, which ruins a sentence and is doubtless a printer's error. The new notes are easily distinguished by their square brackets. They are evidence of Bradley's perpetual eagerness to re-consider important doctrines and to criticize them afresh. They show none of the excessive self-confidence which, in spite of Bradley's habit of self-depreciating and skeptical comment, was (by his own logic, see, e.g., p. 313) implied in such observations as those on his generation "when every man knows better, and does worse, than his father before him" (p. 3). To the present reviewer the new notes seem to modify most the fourth essay, on hedonism. Bradley appears to concern himself less with the "contradictions" inherent in "pleasure for pleasure's sake," and more with his wider view that no single sort of activity, function, or experience is so good that we could be satisfied with it alone—and the more "abstract" it is, the less we could be satisfied. The new notes (pp. 101, 107, 108, 110) also lay great stress on what was already implied in Essays V, VI, and VII, namely, that there is no justification for Bradley's objection to hedonism on the ground that it offers no specific moral guidance or legislation. Bradley now makes clear the bearing on this objection of his view that "understanding," and not "guidance," is all that we can expect of any ethics.

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La Philosophie de Plotin. ÉMILE BRÉHIER. Paris: Boivin et Cie. 1928. Pp. xix + 188.

This little book is a course of lectures given at the Sorbonne in 1921–1922. It does not attempt to expound the whole of Plotinus's

philosophy, but simply to give what he has to say about the "intelligible world." The reputation of M. Bréhier as a translator of Plotinus and a student of the whole Hellenistic period makes this study particularly interesting, especially in those portions which run counter to the traditional interpretation of Plotinianism. This is especially true in the chapter which deals with the orientalism of Plotinus, which presents good reasons for believing that the peculiar form of mystic communion with the divine which is preached in the *Enneads* comes in the last resort from the *Upanishads*, as they were presented to the western world in such romantic versions as the *Life of Appolonius of Tyana* by Philostratus. M. Bréhier indicates not only the sources of Plotinus's knowledge of Indian wisdom, but also the similarity between his teachings and those of the *Upanishads*. The full evidence for the case, however, can not be presented here.

This brief note should not be ended without some mention of the skill with which M. Bréhier situates Plotinus in his time. He now appears as an Egyptian sage living in third-century Rome and not as a disembodied spirit. This would make small difference if it simply provided a greater esthetic satisfaction, but as a matter of fact such a realistic treatment of the history of philosophy makes the doctrines it expounds much more intelligible than the manner of, say, a Windelband does, magnificent as Windelband's history is.

Finally the reader's attention should be called to Chapter II, which deals with the literary form of the *Enneads*. This chapter lessens many of the difficulties in reading Plotinus and should be prescribed reading for all students in the subject.

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Students of German philosophy will be glad to know that New York University Library has acquired the collection of Hegel and Hegeliana—851 numbers—which was offered for sale by Dr. Hellersberg, Antiquariat und Verlag, Charlottenburg, Germany.

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